computer system), and may be present on or within different computer products within a system or network. A computer system may include a monitor, printer, or other suitable display for providing any of the results mentioned herein to a user.

[0152] Although the invention has been described with respect to specific embodiments, it will be appreciated that the invention is intended to cover all modifications and equivalents within the scope of the following claims.

[0153] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary. The use of "or" is intended to mean an "inclusive or," and not an "exclusive or" unless specifically indicated to the contrary. Reference to a "first" component does not necessarily require that a second component be provided. Moreover reference to a "first" or a "second" component does not limit the referenced component to a particular location unless expressly stated. The term "based on" is intended to mean "based at least in part on."

1. (canceled)

2. A method for determining a location of a mobile device relative to a vehicle, the method comprising:

receiving a set of signal values measured using one or more device antennas of the mobile device, the set of signal values providing one or more signal properties of signals from one or more vehicle antennas having various locations in the vehicle, wherein the one or more signal properties of a signal change with respect to a distance between a device antenna of the mobile device that received the signal and a vehicle antenna that emitted the signal;

storing a machine learning model that classifies a location of the mobile device as being within a region of a set of regions in a vicinity of the vehicle based on the one or more signal properties of the signals from the one or more vehicle antennas, the machine learning model being trained using various sets of signal values measured at various locations across the set of regions;

providing the set of signal values to the machine learning model to obtain a current classification of a particular region of the set of regions, the particular region corresponding to the location of the mobile device.

3. The method of claim **2**, further comprising:

providing the particular region to a control unit of the vehicle, thereby enabling the control unit to perform a prescribed operation of the vehicle.

4. The method of claim **2**, wherein the set of regions includes a first subset of one or more regions outside the vehicle and a second subset of one or more regions outside the vehicle.

5. The method of claim **2**, wherein the set of regions includes one or more regions outside the vehicle and one or more regions inside the vehicle.

6. The method of claim **2**, further comprising:

receiving one or more other values measured by the mobile device, the one or more other values providing one or more physical properties of the mobile device, wherein the machine learning model is trained using the one or more physical properties; and

providing the one or more other values to the machine learning model to obtain the current classification of the particular region within which the mobile device is currently located.

7. The method of claim **2**, wherein the method is performed by the mobile device, the method further comprising:

measuring the signal values using the mobile device.

8. The method of claim **2**, wherein the method is performed by a computer of the vehicle.

9. The method of claim **2**, wherein the one or more signal properties include a signal strength, a time-of-flight value, or both.

10. The method of claim **2**, further comprising:

determining a location of the mobile device relative to the vehicle at a plurality of times, thereby obtaining a plurality of locations of the mobile device outside the vehicle; and

providing the plurality of locations or a difference in the plurality of locations to a control unit of the vehicle, thereby enabling the control unit to perform a preparatory operation of the vehicle based on a motion of the mobile device toward the vehicle.

11. The method of claim **10**, wherein the set of regions includes a first region and a second region that is farther away from the vehicle than the first region, and determining a location of the mobile device relative to the vehicle at a plurality of times comprises:

determining a first location of the mobile device at a first time, the first location corresponding the second region; and

determining a second location of the mobile device at a second time later than the first time, the second location corresponding to the first region.

12. The method of claim **2**, wherein the one or more device antennas of the mobile device include one or more radiofrequency (RF) antennas, include one or more magnetic antennas, or include one or more RF antennas and one or more magnetic antennas.

13. The method of claim **12**, wherein the one or more device antennas of the mobile device include one or more RF antennas and one or more magnetic antennas, wherein the one or more RF antennas operate within a range of 3.1 GHz to 10.6 GHz, and wherein the one or more magnetic antennas operate within a range of 100 kHz to 900 kHz.

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